The Impact of the Economic Freedom of the World Index

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The *Economic Freedom of the World* (EFW) index is an outgrowth of a series of conferences sponsored by the Fraser Institute during 1986-1994.[1] The conferences were hosted by Milton and Rose Friedman along with Michael Walker of the Fraser Institute. The EFW index contains 38 components designed to measure the degree to which a nation's institutions and policies are consistent with voluntary exchange, protection of property rights, open markets, and minimal regulation of economic activity.[2] In addition to the summary rating for each country, the EFW data also provides ratings in five major areas: (1) size of government, (2) legal structure and security of property rights, (3) access to sound money, (4) exchange with foreigners, and (5) regulation of capital, labor, and business. The EFW index provides current ratings for 123 countries, and the data are available for approximately 100 countries continuously (at five-year intervals) throughout 1980-2001. Ratings are available for a smaller set of countries as far back as 1970. For additional details, see Gwartney and Lawson (2003) or web site: www.freetheworld.com.

What has been the impact of this measure of economic freedom? This is a difficult question to answer, particularly for individuals who actively participated in the construction of the measure. Of course, there are several different dimensions to this question? What has been the impact on media coverage, policy makers and other active participants in the political arena, scholars, professional researchers, and our knowledge about how the economy works? We will consider the impact of EFW in each of these areas.

I. Media Coverage

In recent years, the release of the *Economic Freedom of the World* annual report has attracted considerable media coverage. The appendix contains a partial listing of the international press coverage of the release of the 2002 annual report. In some ways this coverage is a mixed blessing. On the positive side, the press coverage draws attention to economic freedom and this may help inject it into the policy debate. However, newspaper coverage typically emphasizes country rankings and the year-to-year changes in the ratings and rankings of various countries. Focus on the year-to-year changes implies that economic freedom is a quick fix, something like Keynesian demand stimulus policy. This is not the case and we do not want to leave people with the impression that it is.

Unless they reflect a trend over a lengthy period, year-to-year changes are not very important. Short term increases in EFW, for example, may exert little positive impact on growth during the next couple of years, particularly if it is questionable whether they will be maintained in the future. Unfortunately, coverage that focuses on whether a country's rating increased or decreased by a few tenths of a point reflects the "quick fix" mentality.

Of course, some of the press coverage has been right on target. Certainly this was the case with the millennium issue of *The Economist*. In a lengthy feature article, the editors focused on the continuing stagnation of many poor countries throughout the world. They posed the question, "How is it possible that so little progress has been made, when at the same time, the richer nations continue to prosper?" While noting that some argue that the richer nations exploit the poor ones, *The Economist* cited the Economic Freedom of the World project as evidence that the "explanations lie in the way poor countries are governed, rather than in their natural disadvantages or in unfair treatment by the rich."[3]

II. Impact on the Public Policy Debate

While the policy effects of something like the EFW project are difficult to quantify, there have been at least some indirect effects. The most important of these have probably been in Russia. During the latter half of the 1990s, the Moscow-based Institute of Economic Analysis headed by Andrei Illarionov was a highly active member of the economic freedom of the world network. According to Andrei, this participation encouraged him to advise President Putin to stress the need for lower tax rates, de-regulation, and other issues consistent with economic freedom. After his election to the Presidency in 2000, president Putin appointed Andrei as his Chief Economic Advisor.

While the newly elected administration was shaping its economic policy, Andrei arranged for several market-oriented economists to spend several weeks in Russia discussing growth-oriented strategies with key Russian policy makers and directly with President Putin. I was honored to be among those invited to participate in these discussions. More importantly, the participants included Arnold Harberger, who Andrei believes is the most useful economist to come to Russia in the post communist period! As a result of Andrei's efforts, even the skeptics among the Putin policy makers were at least familiar with the case for policies more consistent with economic freedom . The new administration moved quickly to adopt a 13 percent flat rate personal income tax and re-structure the payroll tax in a manner that would substantially reduce the catastrophic marginal tax rates that were fueling massive tax evasion. In turn, these policies have contributed to the growth of the Russian economy during the last several years.

The flat tax idea is continuing to spread among former socialist countries. In the 1990s, Latvia and Estonia instituted flat rate personal income taxes of 25 percent and 26 percent respectively. Following the example of Russia, Ukraine recently capped its top personal income tax rate at 13 percent. Prodded by our friends at the Hayek Institute, the Slovak Republic has adopted a 19 percent flat personal income tax that is scheduled to take affect next year. Key political officials in both Poland and the Czech Republic are also considering flat tax proposals. Unfortunately, all of

these countries have exceedingly high payroll taxes that often apply at all levels of earnings. As a result, the combination of the personal income and payroll taxes continues to generate high marginal tax rates on earnings. Thus, it is a misnomer to view the tax reform countries of Eastern Europe as isles of low taxes in the ocean of high-tax Europe, but at least the movement is in the right direction.

While the affects on the policymaking process have been less dramatic in other places, the EFW index has exerted an impact on the policy debate. Leon Louw of the Free Market Foundation of Southern Africa has developed an impressive PowerPoint presentation around the EFW index and presented it on numerous occasions to both general audiences and key policy makers in that country. Hannes Gissurarson of Iceland used the EFW data and the economic freedom model as the foundation for his book, *How Can Iceland Become the Richest Country in the World*? (Reykjavik:University of Iceland Press, 2001). Gissurarson's writings and other activities have helped promote Iceland's recent round of reductions in both the corporate and personal income tax rates as well as the abolition of the net wealth tax. In turn, Gissurarson states, "The index of economic freedom has been a great help to me in the exposition of the ideas of spontaneous cooperation and coordination and of free trade." (Correspondence with James Gwartney, June 30, 2003).

III. Spin-Off Projects

The EFW project as also generated a number of spinoffs. Two of the most important are the Chinese Marketization and the North American Economic Freedom projects. These two projects use the EFW methodology to develop sub-regional measures of economic freedom.

Liwen Zhang, a leading Chinese economist, spent almost a year at the Fraser Institute studying the EFW methodology and working on the Chinese Marketization Index. This index provides a measure of "marketization" for each of the Chinese provinces. While the Chinese use the term marketization, the index is nonetheless essentially a measure of economic freedom. The Chinese economists with whom we work indicate that the marketization index is followed by both Chinese scholars and policy makers.

The Fraser Institute applied the methodology of the EFW index and used it to develop a North American economic freedom index. This index is a direct result of the EFW project. Currently, it provides a measure of economic freedom within the states and provinces of the United States and Canada. The regional data for Mexico will be integrated into the index in the near future. In addition, a group of economists at Clemson University has worked on the development of an economic freedom index for the 50 states of the U.S. However, the methodology of this project differs substantially from that of the EFW and it might be a stretch to argue that it was inspired by the the EFW.

The EFW project has led to increased cooperation and exchange of ideas among free-market advocates around the globe. The publication of the first *Economic Freedom of the World* report led

to the development of the EFW network. This network is now comprised of institutes in 59 different countries. These institutes help with data verification, provide details that are sometimes difficult to obtain from international sources, and use the index in various ways to promote free market ideas in their respective countries. The annual meeting of the network provides a forum for the exchange of ideas and discussion of how the index can be improved and marketed more successfully.

In addition, the institutes sometimes use the index as a focal point for their activities. The work of the Friedrich Naumann Foundation of Germany provides a case in point. Each year the Naumann Foundation brings many of Asia's leading market-oriented economists and journalists together for a meeting. Several of the recent meetings have focused on the EFW project.

Finally, one of the potentially most important spinoffs of the EFW project is the software package recently developed by Global Economic Software. This package combines the 1970-2001 EFW data with the World Indicators database of the World Bank on a single CD-Rom. In addition, the accompanying software makes it possible for even a lay researcher to prepare graphics illustrating the impact of EFW on numerous social and economic indicators. It also makes it easy to prepare graphics illustrating EFW and social/economic comparisons across time periods and country groupings (for example, a specific country compared to other countries in a region or the ten countries with the highest EFW ratings). This package will make it much easier for both researchers and opinion makers to provide vivid visual aids illustrating complex statistical relations. For additional information on this package, see Chapter 2 of the 2003 EFW report or visit www.globaleconomicsoftware.com.

IV. Impact on Professional Economists

It takes time for new ideas and tools to penetrate the literature of professional economists. This penetration is highly important because it reflects current economic thought and affects the training of the next generation. The number of researchers using the EFW index has been steadily rising. As of mid-year 2003, the journal article citations to the various EFW annual reports stood at approximately 100, and this citation count was growing at an increasing rate. A sizable fraction of the papers presented at the most recent annual meeting of the Public Choice Society incorporated the EFW index as a research tool. Later this year, the *European Journal of Political Economy* will publish a special issue on the topic of economic freedom. Most of the articles in this special issue employ the EFW index.

Researchers have utilized the EFW index in a wide variety of ways. Of course, the EFW index has been used extensively to investigate the sources of cross-country differences in income levels, growth rates, and other indicators of economic performance. But the index has also been utilized to investigate numerous other topics including (1) income inequality, (2) the evolution of democracy, (3) the status of women and minorities, (4) environmental quality, (5) the diffusion of technology, (6) the protection of human rights and civil liberties, and (7) the structure of constitutions.

During the last year, I have been informed of a number of doctoral dissertations that made extensive use of the EFW data. For example, Susanna Lundstrom (Goteborg University, Sweden) used the EFW to investigate the interrelationships between institutions, economic growth, and environmental quality. Julio Cole (Universidad Francisco Marroquín, Guatemala) has also used the EFW data in his dissertation, which focuses on the explanation of cross-country differences in economic growth. Given the number of recent inquiries from graduate students working on dissertations, this use of the EFW data should increase significantly in the years immediately ahead.

V.   Impact of EFW on our Understanding of the Growth Process

Since the time of Adam Smith, most economists have argued that market economies will generally outperform those that are more highly regulated. Of course, there has been considerable evidence supportive of this proposition for some time. For example, the more market-oriented West Germany grew more rapidly and achieved higher income levels than the more highly regulated East German economy during the post-World War II period. Correspondingly, South Korea has clearly outperformed North Korea during the last four decades. But what about economies with less dramatic structural differences? Do small differences in economic freedom matter much? How long does it take for a change in economic freedom to influence a country's growth rate? How do differences in economic freedom influence the efficiency of resource use and the productivity of investment? Without a comprehensive measure of economic freedom, answers to questions like these are problematic.

When analyzing issues of growth and income levels, it is important to focus on a lengthy period of time. Short-term fluctuations in growth rates will be influenced by a number of factors such as business cycle conditions and changes in the world price of important import or export items. In the short run, these largely random factors may dominate and conceal the strength of the relationship between economic freedom in growth. Moreover, credibility will influence the response to a policy change. Before decision-makers will be willing to make major behavioral changes, they must be convinced that the change in policy direction is permanent rather than temporary. Furthermore, it will take time for information to be transmitted and markets to adjust fully to a new economic environment. Thus, the primary response to a policy change will often be delayed and the full response will almost always be greater in the long run than in the short run.

Because the EFW data is both comprehensive and available over a lengthy time period, it is particularly suitable for the systematic analysis of cross-country differences in income levels and the long-run growth process. Using a database of the 99 countries for which the EFW ratings were continuously available at five-year intervals during 1980-2000, the tables discussed below will summarize six of the most important findings of this research.[4] (See Appendix 2 for the tables.)

1. The maintenance over a lengthy period of time of institutions and policies consistent with economic freedom is a major determinant of current cross-country differences in per capita GDP. The mean EFW rating over the two decades of the 1980-2000 period provides a

measure of long-term institutional quality. In order to achieve a high mean rating, a country would have to follow policies largely consistent with economic freedom throughout the lengthy period. Similarly, a low mean rating would be indicative of long-term policies inconsistent with economic freedom. As Table 1 shows, cross-country differences in the mean EFW rating during 1980-2000 explain 63.2 percent of the cross-country variation in 2000 per capita GDP. [5] When the percentage of a country's population residing in the tropics, a variable popularized by Jeffrey Sachs, is added to the model, the explanatory power increases to 75.1 percent. Clearly, long-term differences in institutional quality exert an enormous impact on per capita income levels.

2. And institutional and policy environment consistent with economic freedom is a key determinant of investment. Table 2 shows the relationship between long-term economic freedom and various measures of investment after the effects of location, geography, and initial income level are taken into account. As Equation 1 shows, a one-unit increase in the mean EFW rating during 1980-2000 was associated with a $1281 (1995 US dollars) increase in annual real investment per worker during the two decades.

The investment per worker figures of Equation 1 include both private sector and public sector investment. Foreign direct investment (FDI) per worker provides an alternative measure that will be almost entirely reflective of private investment flows. Furthermore, the FDI figures will reflect the attractiveness of a country's investment climate to those residing outside of the country. As Equation 2 shows, economic freedom exerts a positive and significant impact on the inflow of foreign investment. A one-unit increase in EFW was associated with a $546 increase in annual FDI per worker during 1980-2000. A higher initial income level was associated with more foreign investment per worker, but the geographical variables did not exert a significant impact on FDI.

Equation 3 (Table 2) illustrates the impact of EFW on investment as a share of GDP (I/GDP). Once again, the EFW rating is positive and statistically significant. Other things constant, a one-unit increase in long-term EFW enhances investment as a share of GDP by 2.16 percentage points. Equation 4 (Table 2) considers the impact of economic freedom on the growth of capital per worker. Again, the impact is positive and significant. A one unit increase in a country's mean EFW rating during 1980-2000 enhance the annual growth rate of physical capital per worker by an estimated 1.24 percentage points.

Taken as a group, the regressions of Table 2 indicate that a country's institutional environment exerts a strong impact on capital formation. Countries that adopt policies and institutions that are consistent with economic freedom will have higher rates of capital formation, while countries that adopt unsound institutions will find that capital will flow elsewhere.

3. Economic freedom not only exerts an impact on the level of investment, it also influences growth by improving the productivity of investment. Table 3 illustrates this point. The dependent variable in Table 3 is the growth of per capita GDP during 1980 to 2000. As Equation 1 shows, investment as a share of GDP exerts a highly significant positive impact on long-term growth. Equation 2 (Table 3) interacts the investment variable with economic freedom. The first independent variable multiplies I/GDP by one if a nation's EFW rating is 7 or above, and zero

otherwise. The second independent variable does the same for nations with an EFW rating between 5 and 6.99, and the third independent variable separates out countries with an EFW rating below 5. The key feature of the regression is the relative size of the coefficients. For countries with EFW ratings of 7 or above, the coefficient is .275, which is greater than the .236 coefficient for the countries with ratings from 5 to 6.99, which in turn is greater than the .197 coefficient on the countries with ratings below 5.0. This indicates that a unit increase in investment enhances growth by a larger amount in countries with higher EFW ratings. This simple equation including only the interaction of EFW and investment explains almost half of the variation in GDP growth across countries.

Equation 3 (Table 3) adds the geographical variables to the model. The magnitudes of the coefficients for the I/GDP variables all fall by a small amount, but the pattern remains the same. The coefficient of .241 on the group with EFW ratings of 7.0 or more is 13.6 percent higher than the coefficient of .212 on the middle group of countries. Similarly, investment in the highest-rated group of countries is 31.7 percent more productive than in the lowest-rated group (EFW < 5.0), where productivity is measured as the impact that a given level of investment has on the rate of per capita GDP growth. Thus, investment is more productive--it exerts a stronger impact on growth--when it is undertaken in countries with higher EFW ratings.

4. When both a direct (through improved efficiency) and indirect (through enhancement of the investment rate) effects are taken into account, a one unit increase in EFW increases long-term growth by about one and a quarter percentage points. Table 4 incorporates the key institutional, geographic-locational, and capital formation variables into combined models and uses them to analyze the growth of per capita GDP during 1980-2000. It also incorporates a methodology capable of capturing both the direct (through improvements in efficiency and productivity) and indirect (through capital formation) effects of economic freedom on the long-term growth of per capita GDP.

The dependent variable In Table 4 is the growth rate of real GDP per capita during 1980-2000. In Equation 1 the independent variables are mean EFW (1980- 2000), changes in physical and human capital (Kpw and Hpw), percentage of population residing in the tropics (Tropics), and percentage of population living within 100 kilometers of an ocean coastline (Coastal), and initial per capita GDP.[6] The independent variables all have the expected sign and together they explain almost 60 percent of the cross-country variation in growth rates during 1980- 2000.

The 0.81 coefficient on the EFW variable indicates that a one unit difference in the 1980-2000 mean EFW rating was associated with 0.81 of a percentage point increase in growth during the period after the affects of the other independent variables, including Kpw, have been taken into account. Thus, the EFW coefficient of Equation 1 reflects only its direct impact on growth as a result of its impact on the efficiency of resource use. But this is only part of its impact on growth. As was illustrated in Table 2, EFW also influences investment and the growth of the capital stock (Kpw). The EFW coefficient in Equation 1 of Table 4 will not reflect this indirect impact.

In order to capture both the direct (resulting from a more efficient use of resources) and indirect (resulting from higher investment levels) effects of EFW, the residuals from Equation 4 of Table 2 were substituted for the change in Kpw variable in the model of Table 4. These residuals indicate that the cross-country variation in Kpw that is unrelated to EFW and the other independent variables of Equation 1 of Table 4. When this substitution is made, the coefficients for EFW and the other independent variables in the model will register both their direct and indirect (through changes in the growth of Kpw) effects on the growth of per capita GDP. Equation 2 (Table 4) indicates that the combined direct and indirect effects of a one-unit change in EFW enhance long-term growth by an estimated 1.24 percentage points.

Thus, higher institutional quality, as measured by the EFW rating, has two reinforcing effects on the relationship between investment and GDP growth: better institutions both increase the level of investment, and enhance its productivity. When both of these effects are taken into account, a one-unit change in EFW increases long-term growth by an estimated 1.24 percentage points. Because this is a change in a growth rate, it will have a large cumulative effect. Over a thirty year period, for example, a one-unit increase in a country's EFW index would increase the country's per capita GDP by approximately 43 percent.

These findings illustrate why so much of the growth literature based on the production function approach of Solow is highly misleading. Until recently, almost all of the production function growth models failed to include institutional measures. Thus, they omitted both the direct and indirect effects of institutional quality. Moreover, even the more recent growth models that sometimes include various indicators of institutional quality along with investment fail to register the indirect effects of institutions. Thus, they continue to understate the importance of institutional quality (and economic freedom). Hopefully, incorporation of the EFW measure into the growth models of the future will help alleviate some of the misleading impressions created by the omissions of the past.

5. Changes in economic freedom enhance long-term growth. Even though countries with higher EFW ratings grow more rapidly, some might still question whether changes in economic freedom enhance long-term growth. Table 5 sheds light on this issue. The dependent variable in Table 5 is the annual growth rate of per capita GDP during 1980-2000. In addition to the mean 1980-2000 EFW rating, changes in EFW during the decade of the 1980s and the decade of the 1990s are included in the analysis. Equation 1 includes the change in physical and human capital per worker (Kpw and Hpw) along with the three economic freedom variables. These five variables explain 58.5 percent of the cross-country variation in annual growth rates during 1980-2000.

The change in EFW during the 1980s exerted a positive and significant impact on the annual growth rate over the two decades. A one-unit increase in EFW during the 1980s enhanced growth during 1980-2000 by an estimated 0.71 percentage points. The change in EFW during the 1990s was positive but insignificant. The insignificance of the change during the 1990s is not surprising given the expected time lag accompanying an institutional change and the fact that a change during the 1990s would potentially impact growth for only a fraction of the two decades.

Equations 2 and 3 add two additional variables, tropical location and initial income level, that prior analysis suggests exert a significant impact on the growth of per capita GDP. The addition of these two variables increases the explanatory power of the model to 62.4 percent. Both the tropical and initial income variables are significant and have the expected sign, but they exert little impact on either the pattern or the significance of the other variables in the model. The change in EFW during the 1980s is significant in both Equations 2 and 3 and its estimated impact on the growth rate of per capita GDP remains near seven-tenths of a percentage point. The change in EFW during the 1990s continues to be positive, but it falls just short of significance at the 90 percent confidence level.

The pattern of these results sheds light on the impact of institutional change. The size and robustness of the change in EFW during the 1980s suggests that changes in institutional factors make a difference and that they will continue to exert an impact on economic growth over a long period of time. Correspondingly, the size and insignificance of the change in EFW during the 1990s indicates that the full impact of an institutional change will take time and that the immediate effects may be relatively small.

6. The EFW measure explains the divergence/convergence puzzle. Economic theory suggests two major reasons why the income levels of less developed economies will converge toward their higher income counterparts. First, in a world of diminishing returns, the neoclassical model implies that the productivity of capital will be lower in high-income countries where capital is more plentiful than in lower income countries where it is more scarce. In turn, the higher productivity of capital in the low-income countries will cause capital to flow in their direction, thereby enhancing their growth and promoting the convergence of cross-country income levels. Second, low income countries will be able to emulate and adopt, either freely or at a low cost, the proven technologies and successful business techniques employed in the more advanced nations. In contrast, new technologies and better business practices will have to be discovered, perhaps through costly research and development, in the more developed economies. Thus, technology and entrepreneurial activity should exert a more positive impact on growth in the less developed areas. This too should lead to convergence.

Thus, traditional economic theory indicates that capital should move toward low income countries and that these countries should grow more rapidly than their higher income counterparts. But the real world is inconsistent with this view; most low-income countries have grown less rapidly than their high income counterparts. Income divergence rather than convergence is the norm (Dollar 1992; Pritchett 1997). Many economists have been puzzled by this phenomenon.

As Equation 1 of Table 6 shows, there was a positive and significant relationship between initial (1980) income level and the growth of per capita GDP during 1980-2000 for the 99 countries of our basic data set. This positive relationship indicates that there was a tendency for high-income countries to grow more rapidly than those with low initial income levels. These findings reflect the divergence trend documented by others. However, Equation 2 illustrates the source of the divergence. Once the quality of institutions, as measured by the EFW index during 1980-2000, is introduced into the model the sign of the initial per capita GDP variable switches from positive to negative and the t-ratio (2.10) indicates significance at more than the 95 percent level of confidence.

Thus, when the quality of institutions is held constant across countries, the expected trend toward income convergence emerges. Further, as Equation 3 shows, this trend toward convergence is unaffected by the introduction of the physical capital, human capital, and tropical location variables into the model. Thus, when the quality of institutions is held constant by including the EFW rating as an independent variable, lower income countries grow faster than higher income countries, providing empirical support for models that predict convergence.[7]

VI. Conclusion

Critics often argue that a market economy leads to excessive income inequality, environmental degradation, extreme poverty, poor working conditions, and the like. Of course, supporters of markets disagree, but without a measure of economic freedom, answers to key questions are elusive and the debate often generates more heat than light. Seventeen years ago when Milton and Rose Friedman, Douglass C. North, Mike Walker and others set out on what became the EFW Project, we sought to develop a comprehensive, objective, and transparent measure of economic freedom that would be useful to a wide cross section of researchers. At the time, we perceived that the true test of our success would be widespread use of the measure by others, including those not favorably inclined toward a market economy. In our judgment, widespread use by other researchers is still the best measure of our impact. While we have not yet reached the pinnacle of success, we have made significant movement up the mountain.

Appendix 1: Press Coverage of

Economic Freedom of the World: 2002 Report

This is a partial list of the international coverage of the release of the *Economic Freedom of the World: 2002 Report.*

- People's Daily (China)
- The BBC World Service
- Financial Times of London
- CNN
- The Daily Star, (Dhaka, Bangladesh)
- Frankfurter Allgemeine Zeitung
- Investor's Business Daily
- The Economist
- Business Week
- Agence France-Presse (4 articles)
- ITAR-TASS
- Notimex
- DPA (German Press Agency)
- Jiji Press
- Sing Tao Daily (China)
- Kyodo News
- Xinhua
- Japan Economic Newswire
- Inter Press Service
- Press Trust of India
- National Post, (Canada)
- Globe and Mail (Canada)
- Ottawa Citizen (Canada)
- Bloomberg TV
- Reuters
- South China Morning Post (2 articles)
- New Zealand Herald
- Hindustan Times
- CNN en Espanol
- White House Bulletin
- Pravda
- Reforma (Mexico)
- El Diario (Chile)
- Singapore Business Times
- Komersant (Russia)
- Vedomosti (Russia)
- La Nacion (Costa Rica)
- La Republica (Costa Rica)
- Corporate Mexico
- Asia Pulse
- Asia Times
- AsiaPort
- Daily News Asia
- Times Banks & Exchanges (Russia)
- The Christian Science Monitor
- Radio Free Europe
- Radio Free Asia
- SBS Broadcasting (Australia)
- Chinese Radio (US)
- El Comercio, Ecuador
- El Financiero, Ecuador
- Latin Trade, Florida
- Economia, Portugal
- Público, Portugal
- United Press International
- BNS, Lithuania
- Lietuvos Aidas, Lithuania
- Respublika, Lithuania
- Lietuvos Televizija, Lithuania
- Znad Wilii, Poland
- Irish Times

Appendix 2: Tables

Table 1	Economic Freedom and Cross-Country Differences in GDP Per Capita	
Dependent Variable: GDP Per Capita, 2000 (t-ratio in parentheses)		
Independent Variables	(1)	(2)
EFW Rating[2], 1980-2000	651 (13.00)	529 (11.91)
Tropics		-8472 (7.03)
Intercept	-11183	-2575
R^2 (adjusted)	63.2	75.1
Number of Countries	99	99

Table 2 Economic Freedom, Geography, and Location as Determinants of Investment

	Dependent Variable (t-ratio in parentheses)			
	Investment Per Worker (US$), 1980-2000	FDI Per Worker (US$), 1980-2000	I/GDP, 1980-2000	Growth of Kpw, 1980-1999
Independent Variables	(1)	(2)	(3)	(4)
EFW Rating, 1980-2000	1281 (4.12)	546 (4.00)	2.16 (3.09)	1.24 (3.76)
GDP Per Capita, 1980 (in 1000s US$)	834 (8.46)	122 (2.92)	-0.60 (2.70)	-0.51 (4.76)
Tropics	-563 (0.92)	-16 (0.06)	-3.76 (2.74)	-2.36 (3.69)
Coastal	-535 (0.83)	-43 (0.16)	3.00 (2.06)	0.53 (0.77)
Intercept	-6457	-2883	12.28	-2.04
R^2 (adjusted)	79.2	51.2	18.5	22.0
Number of Countries	99	97	99	91

Note: Hong Kong and Taiwan were omitted from Equation 2 above because the FDI data were unavailable.

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Table 3 Economic Freedom and the Productivity of Investment			
Dependent Variable: Average Annual Growth Rate of GDP Per Capita, 1980-2000 (t-ratio in parentheses)			
Independent Variables	(1)	(2)	(3)
I/GDP, 1980-2000	0.244 (8.74)		
I/GDP, 1980-2000 x EFW >7.0		0.275 (9.40)	0.242 (7.81)
I/GDP, 1980-2000 x 5.0 < EFW <7.0		0.236 (8.76)	0.212 (7.56)
I/GDP, 1980-2000 x EFW < 5.0		0.197 (6.52)	0.183 (6.21)
I/GDP, 1980-2000 x EFW (top half)			
I/GDP, 1980-2000 x EFW (bottom half)			
Tropics			-0.937 (2.93)
Coastal			0.344 (0.83)
Intercept	-3.96	-3.72	-2.91
R^2 (adjusted)	43.5	49.7	53.1
Number of Countries	99	99	99

Table 4 Economic Freedom, Investment, Geography, and Location as Determinants of Economic Growth

Dependent Variable: Average Annual Growth Rater of GDP per Capita, 1980-2000
(t-ratios in paretheses)

Independent Variables	(1)	(2)
EFW Rating, 1980-2000	0.81	1.24
	(4.00)	(6.67)
Growth of Kpw, 1980-1999	0.35	
	(5.70)	
Growth of Kpw, 1980-1999 (residuals)		0.35
		(5.70)
Growth of Hpw, 1980-1999	0.42	0.42
	(2.08)	(2.08)
Tropics	-1.30	-2.12
	(3.37)	(5.90)
Coastal	0.49	0.68
	(1.25)	(1.73)
GDP Per Capita, 1980	-0.16	-0.33
(in 1000s US$)	(2.33)	(5.58)
Intercept	-3.51	-4.21
R^2 (adjusted)	59.1	59.1
Number of Countries	91	91

Note: The residuals for Growth of Kpw in Equation 2 above are from Table 2, Equation 4.

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Table 5 Changes in Economic Freedom and Economic Growth

Dependent Variable: Average Annual Growth Rate of GDP Per Capita, 1980-2000
 (t-ratio in parentheses)

Independent Variables	(1)	(2)	(3)
EFW Rating, 1980-2000	0.59	0.50	0.89
	(4.17)	(3.38)	(4.35)
Change in EFW Rating, 1980-1990	0.71	0.65	0.68
	(3.09)	(2.84)	(3.08)
Change in EFW Rating, 1990-2000	0.23	0.19	0.27
	(1.34)	(1.13)	(1.62)
Growth of Kpw, 1980-1999	0.42	0.41	0.33
	(7.67)	(7.54)	(5.69)
Growth of Hpw, 1980-1999	0.47	0.45	0.49
	(2.33)	(2.23)	(2.51)
Tropics		-0.57	-1.15
		(1.86)	(3.12)
GDP Per Capita, 1980 (in 1000s US$)			-0.17
			(2.66)
Intercept	-4.15	-3.19	-4.40
R^2 (adjusted)	58.5	59.7	62.4
Number of Countries	91	91	91

Table 6 Divergence, Convergence and Economic Freedom			
Dependent Variable: Average Annual Growth Rate of GDP Per Capita, 1980-2000 (t-ratio in parentheses)			
Independent Variables	(1)	(2)	(3)
GDP Per Capita, 1980 (in 1000s US$)	0.12 (2.25)	-0.14 (2.10)	-0.16 (2.30)
EFW Rating, 1980-2000		1.28 (5.49)	0.87 (4.49)
Growth of Kpw, 1980-1999			0.35 (5.78)
Growth of Hpw, 1980-1999			0.44 (2.17)
Tropics			-1.24 (3.23)
Intercept	0.81	-5.38	-3.71
R^2 (adjusted)	4.0	26.2	58.8
Number of Countries	99	99	91

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Notes

1. For additional information on the proceedings of these conferences and the development of the index, see Walker (1988), Block (1991), and Easton and Walker (1992).

2. For details about the raw data underlying the components of the index, how they were transformed to a zero-to-ten scale, and how they were aggregated, see Gwartney and Lawson (2003).

3. See "Free to be Poor," *The Economist*, Sept. 9th, 1999.

4. The EFW data were continuously available for 103 countries during 1980- 2000. Because their per capita GDP figures and growth rates were dominated by conditions in the world market for crude oil, four of the countries (Bahrain, Kuwait, Oman and the United Arab Emirates) are omitted from the analysis presented here.

5. While the ratings for the 38 components of the EFW index are on a zero to ten scale, the range of the summary ratings is smaller. The mean summary rating for1980-2000 for the 99 countries of this study ranged from the 8.61 rating of Hong Kong to the 3.51 rating of the Democratic Republic of the Congo. The mean 1980-2000 summary rating for the 99 countries was 5.69.

6. The number of observations in the analysis of Table 4 is 91 (rather than 99) because the data on the growth of capital per worker (Kpw) were unavailable for eight countries. All of the omitted countries had a population of less than one million . The data on capital per worker are from Baier, Dwyer, and Tamura (2003).

7. See Knack (1996) for additional evidence on the importance of institutions as a source of income convergence among nations.